

GOLF CLUB HEADS

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to golf club heads. In particular, the
5 present invention relates to golf club heads the weights of which are reduced
for adjusting the center of gravity of the golf club head.

2. Description of Related Art

Fig. 1 of the drawings illustrates a typical golf club head 1 made of
metal. The golf club head 1 includes a golf club head body 10, a striking plate
10 11, and a neck or hosel 12 to which a shaft (not shown) is mounted. The center
of gravity 13 of the golf club head body 10 is relatively close to the hosel side,
as the hosel 12 has a considerable weight. Thus, the center of gravity 13 is not
located in the sweet spot of the striking plate 11. As a result, the momentum of
the golf club head is reduced and the twist-resisting property of the golf club
15 head 1 is adversely affected. Thus, the momentum imparted from the golf
club head 1 to the golf ball is thus reduced. The striking effect of the golf club
head 1 is adversely affected accordingly.

U.S. Patent No. 4,995,609 discloses an improvement in iron golf clubs
in which a hollow hosel is provided to thereby reduce weight of hosel and
20 bridge that can be redistributed to the blade to increase the momentum that
can be imparted to a golf ball. In an embodiment of the U.S. Patent No.
4,995,609, as illustrated in Fig. 2 of the drawings, the golf club head 1

includes a golf club head body 10, a striking plate 11, and a hosel 12 to which a shaft 14 is mounted. A step 101 is formed below a heel between the hosel 12 and the golf club head body 10 to reduce the weight of the hosel side, thereby shifting the center of gravity 13 toward the toe of the hosel 12; namely, outwardly away from the hosel 12, thereby increasing the inertial moment of the golf club head 1 that would lead to improvement in the striking effect of the golf club head 1 (i.e., the flying distance of the golf ball). However, although the center of gravity 13 is shifted outwardly away from the hosel 12 through provision of the step 101 of the golf club head 1, the step 101 adversely affects the structural strength of the heel of the golf club head 1. Further, the weight of the lower portion of the golf club head 1 is reduced since the step 101 is located below the heel. Thus, the center of gravity 13 of the golf club head 1 is not only shifted outwardly away from the hosel 12 but also shifted upward. As a result, the sweet spot of the striking plate 11 is thus too high. Essentially, provision of the step 101 in the golf club head 1 neither improves the striking effect nor increases the inertial moment of the golf club head 1. Further, the possibility of breakage or twist of the golf club head 1 is increased.

OBJECTS OF THE INVENTION

The object of the present invention is to provide a golf club head including a neck or hosel having a reduced weight to shift the center of gravity of the golf club head outwardly and downwardly, thereby increasing

the inertial momentum of the golf club head and improving the striking effect of the golf club head.

Another object of the present invention is to provide a golf club head with improved shock-absorbing capacity and strengthened structure.

5 A further object of the present invention is to provide a golf club head allowing a relatively wide adjusting range for the center of gravity.

SUMMARY OF THE INVENTION

To achieve the aforementioned objects, the present invention provides a golf club head including a golf club head body, a striking plate mounted to
10 the golf club head body, a hosel mounted to a side of the golf club head body, and a wrapping layer. The hosel includes a reduced section for reducing a weight of a hosel side of the golf club head, thereby shifting a center of gravity of the golf club head outwardly and downwardly and increasing an inertial momentum of the golf club head. The wrapping layer is made of a
15 light material and wrapped around the reduced section of the hosel for improving structural strength of the hosel and for absorbing shock generated as a result of striking a golf ball.

The hosel further includes an engaging hole for engaging with a shaft. The hosel includes a top end distal to the golf club head body, and a flange is
20 formed on the top end of the hosel for improving bonding stability between the engaging hole of the hosel and the shaft.

The reduced section of the hosel may include at least one protrusion or

recessed portion on an outer periphery thereof for improving bonding stability between the reduced section and the wrapping layer.

In an embodiment of the invention, the reduced section of the hosel includes a conic annular groove in a bottom edge wall thereof for improving bonding stability between the reduced section and the wrapping layer.

In another embodiment of the invention, the reduced section of the hosel extends to a joint area between the hosel and the striking plate.

The hosel is formed by precision casting, casting, mechanical processing, press casting, forging, or injection molding. Alternatively, the hosel is engaged to the golf club head by means of section-by-section engagement. The wrapping layer wraps the reduced section of the hosel by heat pressing, press casting, or injection molding.

Other objects, advantages and novel features of this invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a front view of a conventional golf club head;

Fig. 2 is a front view of another conventional golf club head;

Fig. 3 is a front view of a first embodiment of a golf club head in accordance with the present invention before assembly;

Fig. 4 is a front view of the first embodiment of a golf club head in accordance with the present invention after assembly;

Fig. 5 is a front view of a second embodiment of a golf club head in accordance with the present invention;

Fig. 6 is a front view of a third embodiment of a golf club head in accordance with the present invention;

5 Fig. 7 is a front view of a fourth embodiment of a golf club head in accordance with the present invention;

Fig. 8 is a front view of a fifth embodiment of a golf club head in accordance with the present invention;

10 Fig. 9 is a front view of a sixth embodiment of a golf club head in accordance with the present invention;

Fig. 10 is a front view of a seventh embodiment of a golf club head in accordance with the present invention; and

Fig. 11 is a front view of an eighth embodiment of a golf club head in accordance with the present invention.

15 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Preferred embodiments of the present invention are now to be described hereinafter in detail, in which the same reference numerals are used in the preferred embodiments for the same parts as those in the prior art to avoid redundant description.

20 Referring to Figs. 3 and 4, a first embodiment of a golf club head 1 in accordance with the present invention is made of metal or alloy and includes a golf club head body 10, a striking plate 11, a neck or hosel 12, and a wrapping

layer 20. The striking plate 11 is used to strike a golf ball and may be integrally formed with the golf club head body 10. Alternatively, the striking plate 11 may be engaged to the golf club head body 10 by means of insertion, pressing, brazing, welding, screwing, etc.

5 The hosel 12 includes an engaging hole 122 for engaging with an end of a shaft (not shown). The hosel 12 further includes a reduced section 121. In this embodiment, the reduced section 121 is distal to the club head body 12, and the engaging hole 122 is defined in the reduced section 121. The reduced section 122 reduces the weight and volume of the hosel 12, thereby reducing
10 the weight of the golf club head 1 on the hosel side and relatively reducing the weight of the upper portion of the golf club head 1. Thus, the center of gravity 13 of the golf club head 1 is shifted outwardly and downwardly relative to the hosel 12. The inertial momentum of the golf club head 1 is increased, and the striking effect of the golf club head 1 (i.e., the flying distance of the golf ball)
15 is improved. The hosel 12 may be integrally formed on a side of the golf club head body 10 by means of precision casting, casting, mechanical processing, press casting, forging, molding injection, etc. Alternatively, the hosel 12 is engaged to the golf club head 10 by means of section-by-section engagement.

 Referring to Fig. 4, the wrapping layer 20 is made of light material and
20 wraps the reduced section 122. The light material is selected from a group consisting of carbon fiber, resin, rubber, high molecular polymeric material, and light alloy such as titanium alloy, aluminum alloy, or magnesium alloy.

The wrapping layer 20 wraps the reduced section 122 of the hosel 12 by heat pressing, press casting, or injection molding. The wrapping material 20 not only improves the structural strength of the reduced section 122 of the hosel 12 by also improves the damping value on the hosel side of the golf club head 1 during striking. The shock generated as a result of striking a golf ball is absorbed without adversely affecting the moment of the striking plate 11, thereby improving the striking stability and gripping comfort.

Fig. 5 illustrates a second embodiment of the golf club head in accordance with the present invention. In this embodiment, the hosel 12 further includes a flange 123 on a top end thereof that is distal to the golf club head body 10, thereby improving the bonding stability and reliability between the engaging hole 121 of the hosel 12 and the shaft.

Fig. 6 illustrates a third embodiment of the golf club head in accordance with the present invention. In this embodiment, the reduced section 122 of the hosel 12 includes at least one protrusion 124 on an outer periphery thereof. The respective protrusion 124 includes an annular, circular, or elongated section. Thus, the bonding stability and reliability between the wrapping layer 20 and the reduced section 122 are improved by the respective protrusion 124.

Fig. 7 illustrates a fourth embodiment of the golf club head in accordance with the present invention. In this embodiment, the reduced section 122 of the hosel 12 includes at least one recessed portion 125 on an

outer periphery thereof. The respective protrusion 125 includes an annular, circular, or elongated section. Thus, the bonding stability and reliability between the wrapping layer 20 and the reduced section 122 are improved by the respective recessed portion 125.

5 Fig. 8 illustrates a fifth embodiment of the golf club head in accordance with the present invention. In this embodiment, the reduced section 122 of the hosel 12 extends through an overall length of the hosel 12 to the striking plate 11. The weight of the hosel 12 is further reduced, and the center of gravity 13 is shifted more outwardly. The inertial momentum of the
10 golf club head 1 is further increased. Since the reduced section 122 of the hosel 12 can at best extend to a joint area between the hosel 12 and the striking plate 11, the adjusting range of the center of gravity of the golf club head 1 can be increased.

 Fig. 9 illustrates a sixth embodiment of the golf club head in
15 accordance with the present invention that is modified from the embodiment of Fig. 8. In this embodiment, the hosel 12 further includes a flange 123 on a top end thereof, thereby improving the bonding stability and reliability between the engaging hole 121 of the hosel 12 and the shaft. The reduced section 122 may include at least one protrusion (see protrusion 124 in Fig. 6)
20 or at least one recessed portion (see recessed portion 125 in Fig. 7) for improving the bonding stability and reliability between the reduced section 122 and the wrapping layer 20.

Fig. 10 illustrates a seventh embodiment of the golf club head in accordance with the present invention that is modified from the embodiment of Fig. 4. In this embodiment, the reduced section 122 of the hosel 12 includes a conic annular groove 126 in a bottom edge wall thereof, thereby improving the bonding stability and reliability between the reduced section 122 and the wrapping layer 20.

Fig. 11 illustrates an eighth embodiment of the golf club head in accordance with the present invention that is modified from the embodiment of Fig. 8, wherein an annular groove 127 is defined in the joint area between the reduced section 122 of the hosel 12 and the striking plate 11, thereby improving the bonding stability and reliability between the reduced section 122 and the wrapping layer 20.

In conclusion, the center of gravity 13 of the golf club head 1 in accordance with the present invention is shifted outwardly and downwardly without adversely affecting the strength of the golf club head 1, which cannot be achieved by the prior art golf club heads. Shifting of the center of gravity 13 of the golf club head 1 is achieved by providing a reduced section 122 on the hosel 12. Further, a wrapping layer 20 is mounted on the reduced section 122 to further increase the inertial momentum and the adjustment range of the center of gravity and to further improve the striking effect, shock-absorbing capacity, structural strength.

While the principles of this invention have been disclosed in

connection with specific embodiments, it should be understood by those skilled in the art that these descriptions are not intended to limit the scope of the invention, and that any modification and variation without departing the spirit of the invention is intended to be covered by the scope of this invention defined only by the appended claims.